

METHOD OF GROWING COMPOUND SEMICONDUCTOR CRYSTAL

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Abstract

PURPOSE: To form a compound semiconductor crystal in an epitaxial manner by a method wherein an inert gas is used as a carrier, a source-gas composed of a compound containing a methyl group is flowed, the film of an element as the component of a source is shaped, the source-gas is stopped, the gas of another compound is flowed and the film of an element as a component is formed.

CONSTITUTION: When a GaAs single crystal is grown onto a GaAs single crystal substrate by utilizing an atomic layer epitaxial method, N₂ gas is used as a carrier, and (CH₃)₃Ga is employed as a Ga source and AsH₃ as an As source. The substrate is brought to 500 deg.C and a bubbler to 3 deg.C. The flow rate of (CH₃)₃Ga is brought to 40cm³/min at 0 deg.C and 1 atm. to shape the monoatomic layer of Ga, and the feed of (CH₃)₃Ga is stopped. AsH₃ is flowed at the flow rate of 480cm³/min at 0 deg.C and 1 atm. to form the monoatomic layer of As, and a GaAs single crystal layer is shaped in an epitaxial manner. Since an inert gas is used as the carrier, there is no possibility of the promotion of thermal decomposition, thus largely improving controllability at the time of crystal growth.